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Loneliness and its predictors among older adults prior to and during the COVID-19 pandemic: cross-sectional and longitudinal survey findings from participants of the Atherosclerosis Risk in Communities (ARIC) Study cohort in the USA

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ABSTRACT

Objectives We aimed to ascertain the prevalence of perceived loneliness among older adults following the onset of the COVID-19 pandemic and to examine factors contributing to the perception of loneliness.

Design Cross-sectional and longitudinal data from the Atherosclerosis Risk in Communities (ARIC) Study cohort.

Setting The ARIC Study cohort, a prospective cohort that recruited (1987–1989) participants from four distinct communities in the USA.

Participants 2984 ARIC cohort members.

Primary and secondary outcomes Perceived loneliness assessed using the University of California at Los Angeles (UCLA) UCLA three-item Loneliness Scale telephone interviews conducted May–October 2020 and prior to March 2020.

Results Of the total 5037 participants alive in 2020, 2984 (56.2%) responded to the UCLA three-item questionnaire (mean age 82.6 (SD 4.6) years, 586 (19.6%) black participants, 1081 (36.2%) men), of which 66 (2.2%) reported having had a COVID-19 infection during the observation period. The proportion of participants reporting feeling lonely was 56.3% (n=1680). Among participants with repeat measures of loneliness (n=516), 35.2% (n=182) reported feeling more lonely following pandemic onset. Self-rated health and emotional resilience were strongly associated with self-perceived loneliness. The burden of COVID-19 infections, concern about the pandemic and decreased self-reported physical activity were greater among black as compared with white participants and among those with an educational attainment of less than high school as compared with high school or more.

Conclusion Findings from this study document the increase in perceived loneliness among older adults during the COVID-19 pandemic in the USA.

Strengths and limitations of this study

► This study adds to existing literature on loneliness during COVID-19 pandemic with a report on older adults from a large established biracial cohort.

► Perception of loneliness was assessed using the validated UCLA three-item Loneliness Scale.

► The low response rate to the Psychosocial Questionnaire and attrition of the Atherosclerosis Risk in Communities cohort due to death and non-participation limit the generalisability of study findings.

► Change in perceived loneliness from prior to the onset of the pandemic to the time of the pandemic was limited to a subpopulation with repeat measures., limiting generalisability of this assessment.

BACKGROUND

Prior to March 2020, as much as one-quarter of community-dwelling Americans aged 65 years and older were considered socially isolated[1 2] and nearly one in three older adults in the USA reported loneliness.[3] It is expected that the mandatory sheltering in place, physical distancing, and fear of COVID-19 will have amplified feelings of social isolation and loneliness. Such feelings may be especially pertinent among older adults of lower socioeconomic status, who, as extant data suggest, experience the greatest burden of COVID-19 infections, hospitalisations and deaths.[4] Indeed, low socioeconomic status has been found to be associated with increased sense of perceived loneliness during the COVID-19 pandemic.[5]

Social/physical distancing imposed during the COVID-19 pandemic has had an impact on the provision of formal and informal care to older adults by decreasing the physical availability of family members, who are often the main source of support. Results of two large surveys conducted in the UK separately before and after the onset of the COVID-19 pandemic suggest that the pandemic increased the proportion of those who 'often' felt lonely from 8.5% to 18.3%.[5] Results from the Johns Hopkins COVID-19 Civic Life and Public Health Survey conducted in the USA from 7 April to 13 April 2020 suggest that at the beginning of the pandemic, 13.8% of US adults reported feeling lonely always or often.[6] A survey conducted by the Kaiser Family Foundation in April–May 2018, using a different nationally representative sample of US adults, suggested that 2 years prior to the pandemic, 11% of adults reported feeling lonely always or often.[7] Although the magnitude of the effect of the COVID-19 pandemic on the prevalence of loneliness appears to be different between the USA and UK, such differences may derive from differences in study populations and the timing of the surveys relative to the beginning of the pandemic. Importantly, the distribution of loneliness varies across age groups, with a high prevalence observed among young adults as well as older adults, and a relatively low prevalence in midlife.[8–10]

Recommendations to counter the pandemic-induced loneliness and isolation of social distancing continue to centre around maintaining connections with family members and friends online. Yet, such recommendations are inaccessible to many older adults who are unable to use online services either due to lack of access to the internet[11] or lack of familiarity with technology. Behavioural interventions, such as an increase in physical activity, are already recommended to enhance the overall health of older adults. Although few studies have examined the association of physical activity with perceived loneliness, it is hypothesised that being physically active can reduce feelings of loneliness through stress reduction and an increase in social support.[12]

Our objective was to ascertain the immediate impacts of the abrupt physical isolation imposed by states and communities in response to the COVID-19 pandemic on the prevalence of loneliness in older adults.[13 14] We hypothesised that even a relatively short period of social and physical distancing (2–6 months at the time of this study) will lead to increased prevalence of loneliness among older adults. Our expectation was that the effect of the COVID-19 pandemic on the prevalence of perceived loneliness will be most pronounced among socially vulnerable groups, including those with cognitive impairment.

This work builds on the established prospective Atherosclerosis Risk in Communities (ARIC) Study cohort of men and women recruited from four distinct communities in the USA, who have been followed from 1987 until the present.[15]

METHODS
Study population
The ARIC Study cohort was established in 1987 as a probability sample of 15 792 predominantly black and white men and women, aged 45–64 years, from four communities in the USA (suburbs of Minneapolis, Minnesota; Forsyth County, North Carolina; Washington County, Maryland; and Jackson, Mississippi).[15 16] Extensive physical examinations were carried out at baseline and at subsequent clinical examinations (ongoing). Ongoing follow-up of the ARIC cohort is conducted through annual (semiannual since 2012) telephone interviews and surveillance of mortality and cardiovascular morbidity.[16]

All participants of the ARIC Study cohort alive in March 2020 (n=5307) were invited to participate in this study.

Assessment of perceived loneliness
From May 2020 through October 2020, study participants were asked to complete a short 15-minute questionnaire developed by ARIC investigators to assess loneliness, social support, contact with family members and friends, anxiety, depression, and barriers to social/physical distancing. The questionnaire was administered by telephone as part of recruitment to a clinical examination or as a dedicated call.

The UCLA three-item Loneliness Scale, which assesses lack of companionship, feeling left out and feeling isolated, was used to classify participants' level of perceived loneliness.[17] Response categories 'hardly ever', 'some of the time' and 'often' for each individual question of this questionnaire were scored from 1 to 3, respectively, and added to create a final score ranging from 3 to 9. The loneliness score was used as a continuous measure and also dichotomised at the median value of 4 to classify participants as not lonely[3 4] or lonely.[5–9 18] This cut-off point assured that participants who responded 'some of the time' to only one question of the UCLA three-item Loneliness Questionnaire and 'hardly ever' to the remaining two questions were not classified as lonely. The UCLA three-item Loneliness Scale was also administered to a subset of ARIC cohort participants during semiannual follow-up interviews that were completed prior to the COVID-19 pandemic (January 2020 to mid-March 2020). For those participants, we compared their level of loneliness prior to and during the pandemic, examining the relative difference in the continuous scores as well as transition between the self-reported 'not lonely' and 'lonely' states.

Risk factor and morbidity assessment
Ascertainment of risk factors potentially associated with loneliness was based on data collected at the ARIC Study visit most proximal to the assessment of loneliness, prior study visits and the regular follow-up telephone interviews. Sex, race and educational attainment (less than high school, high school graduate or general equivalency diploma or beyond high school) were self-reported at study baseline. Sitting blood pressure was measured at

each study visit three times using a random zero sphygmomanometer. Blood pressure calculations were made as an average of the second and third measurement. Hypertension was defined as present based on use of antihypertensive medication within 2 weeks of clinical visit data collection or if systolic blood pressure measured was greater than or equal to 140 mm Hg, or diastolic blood pressure was greater than or equal to 90 mm Hg. The presence of diabetes was defined as either a self-reported physician's diagnosis of diabetes, use of hypoglycaemic medications, non-fasting serum glucose levels greater than 200 mg/dL, or fasting (≥8 hours) serum glucose level equal to or greater than 126 mg/dL. Prevalence of heart failure, coronary heart disease and stroke was based on surveillance of hospitalisations conducted through 31 December 2019 for all centres with the exception of the Jackson study centre in which event data were available only through 2017, due to changes in hospital ownership. Self-rated health performed at the telephone follow-up call most proximal to the time of the administration of the Psychosocial Questionnaire was included in analyses. The four possible responses to the question on self-rated health (excellent, good, fair, poor) were grouped into two categories: excellent and good versus fair and poor. Included in the Psychosocial Questionnaire was a question regarding the amount of physical activity the study participants engaged in at the time of the pandemic as compared with the pandemic. We further included in the questionnaire the first item from the Brief Resilience Scale—a question on the ability of the participants to bounce back after hard times, reflecting the participants' level of emotional resilience.[19] Cognitive function was assessed during ARIC visit 7 (2018–2019) and as part of a telephone-based visit 8 clinical assessment (June through December 2020) concurrent with the administration of the Psychosocial Wellbeing Questionnaire. Details of cognitive function assessment are provided elsewhere.[20] Briefly, the Mini-Mental State Examination, the Clinical Dementia Rating form, the Functional Activities Questionnaire and Z scores from a full battery of 10 neuropsychological tests were used to categorise participants as cognitively normal, having mild cognitive impairment or having dementia.[21] Cognitive function factor scores were derived on the basis of participants' cognitive status, as described previously.[22]

Statistical analyses

Linear regression models were fit to examine the association of self-rated health, emotional resilience and cognitive status with perceived loneliness modelled as a continuous variable. Logistic regression models were specified to examine associations of those exposures with the odds of perceived loneliness, operationalised as a binary variable. All analyses were adjusted for age at time of the administration of the Psychosocial Questionnaire and sex. Additional covariates included educational attainment and prevalence of comorbidities.

Table 1 Characteristics of study participants (N=2984); the ARIC Study, May–October 2020

Characteristic	N (%) or mean (SD)
Age (years), mean (SD)	82.6 (4.5)
Sex, % men	1081 (36.2)
Race, % black	586 (19.6)
Educational attainment, % less than high school	371 (12.4)
Diabetes	1028 (34.5)
Hypertension	2418 (81.0)
Prevalent CHD	227 (7.6)
Prevalent HF	301 (10.3)
Living alone	1111 (37.8)
Cognitive status	
Cognitively normal	1904 (63.8)
Mild cognitive impairment	719 (24.1)
Dementia	31 (1.0)
Missing cognitive status ascertainment	330 (11.1)
Self-rated health	
Good or excellent	2470 (82.8)
Fair or poor	514 (17.2)
COVID-19 diagnosis	66 (2.2)

ARIC, Atherosclerosis Risk in Communities; CHD, coronary heart disease; HF, heart failure; SD, Standard deviation.

Patient and public involvement

Patients or the public were not involved in the design, conduct, reporting or dissemination of our research.

RESULTS

A total 3299 of 5307 eligible ARIC cohort members were administered the Psychosocial Questionnaire. Excluded from analyses were 231 who did not complete the questionnaire, 76 participants missing most of the covariate data, and due to small numbers, 8 participants of race other than black or white, leaving a total 2984 participants in the analytical sample (56.2% response rate).

Mean age of the study participants was 82.6 (SD 4.6) years, with 1081 (36.2%) men and 586 (19.6%) of black race (table 1). Diabetes and hypertension were prevalent in this population at 34.5% (n=1028) and 81.0% (n=2418), respectively. Cognitive status was assessed at visits 5, 6 or 7 among 2654 participants, of whom 1904 (63.8%) were classified as cognitively normal, based on the worst status observed across the three visits. Approximately 2470 (83.0%) of the study participants considered their health to be good or excellent, as compared fair or poor. Close to 38.0% of the study participants (n=1111) were living alone at the time of the administration of the Psychosocial Wellbeing Questionnaire. Descriptive analyses stratified by race, sex and age

Table 2 Response to the UCLA three-item Loneliness Questionnaire

A. Questionnaire administered prior to the COVID-19 pandemic (Jan–Mar 2020) and during the pandemic (May–Oct 2020); N=516

	Pre-pandemic			During the pandemic		
	Hardly ever	Some of the time	Often	Hardly ever	Some of the time	Often
How often do you feel that you lack companionship?	395 (75.40%)	101 (19.3%)	28 (5.3%)	332 (64.5%)	34 (6.6%)	149 (28.9%)
How often do you feel left out?	439 (83.6%)	73 (13.9%)	13 (2.5%)	363 (70.5%)	24 (4.7%)	128 (24.9%)
How often do you feel isolated from others?	454 (87.1%)	57 (10.9%)	10 (1.9%)	260 (50.4%)	50 (9.7%)	206 (39.9%)
UCLA Loneliness score, mean (SD)	3.63 (1.14)			4.35 (1.53)		

B. Questionnaire administered during the COVID-19 pandemic (May–Oct 2020); N=2984

				Hardly ever	Some of the time	Often
How often do you feel that you lack companionship?				1861 (62.4%)	245 (8.2%)	823 (27.6%)
How often do you feel left out?				2089 (70%)	113 (3.8%)	727 (24.4%)
How often do you feel isolated from others?				1457 (48.8%)	289 (9.7%)	1842 (39.6%)
UCLA Loneliness score, mean (SD)				4.37 (1.51)		

UCLA, University of California at Los Angeles.

subgroups (less than 80 years and 80 years or older) are presented in online supplemental table 1.

Respondents to this questionnaire were demographically similar to non-respondents (online supplemental table 2). However, the proportion of participants with hypertension and diabetes was greater among respondents as compared with non-respondents (81.0% vs 72.4%, and 34.5% vs 27.6%, respectively), as was the proportion of participants free of cognitive impairment (63.8% vs 45.4%).

The overall proportion of study participants diagnosed with the SARS-CoV-2 infection at the time or prior to questionnaire administration was 2.2% (n=66, table 1). This proportion was marginally higher among black as compared with white participants (3.6% vs 1.9%), and among those with less than a high school education (4.1%) as compared with those with a high school or greater educational attainment (2.0%) (online supplemental table 1).

The proportion of those reporting less physical activity during the pandemic compared with time prior to the pandemic was 41.2% overall, however, this proportion was higher (59.4%) among black participants. No differences were observed across age or sex subgroups.

The mean loneliness score assessed on the basis of the UCLA three-item Loneliness Questionnaire was 4.37 (SD 1.51; range 3–9) (table 2). When the score was, according to a standard convention dichotomised at 4 (17–18), the proportion of participants classified as lonely was 56.3% (n=1680). The loneliness score and proportion of participants classified as lonely did not differ appreciably across age, race, sex or educational attainment subgroups. Among 516 participants who responded to the UCLA three-item Loneliness Questionnaire prior to 15 March 2020 and then again after the COVID-19 physical distance restrictions were imposed, approximately 35.2% (n=182) reported an increased sense of loneliness during the pandemic (table 2 and figure 1).

Self-rated health and the ability to bounce back quickly from hard times (emotional resilience) were the psychosocial factors we found associated with loneliness. In analyses adjusted for sex, race and emotional resilience, fair or poor, as compared with good or excellent, self-rated health was associated with a 0.17 (95% CI 0.08 to 0.27) SD greater standardised UCLA Loneliness score (table 3). In comparison with study participants who reported always being able to bounce quickly from hard times, among those who reported being able to usually bounce back, we observed a 0.30 (95% CI 0.22 to 0.37) SD greater UCLA Loneliness score, while among those who reported sometimes, rarely or never being able to bounce back, we observed a 0.77 (95% CI 0.65 to 0.89) SD greater UCLA three-item Loneliness score in analyses adjusted for sex, race and self-rated health. Emotional resilience was also associated with an increase in perceived loneliness from before to during the COVID-19 pandemic (0.30 (95% CI 0.22 to 0.37)
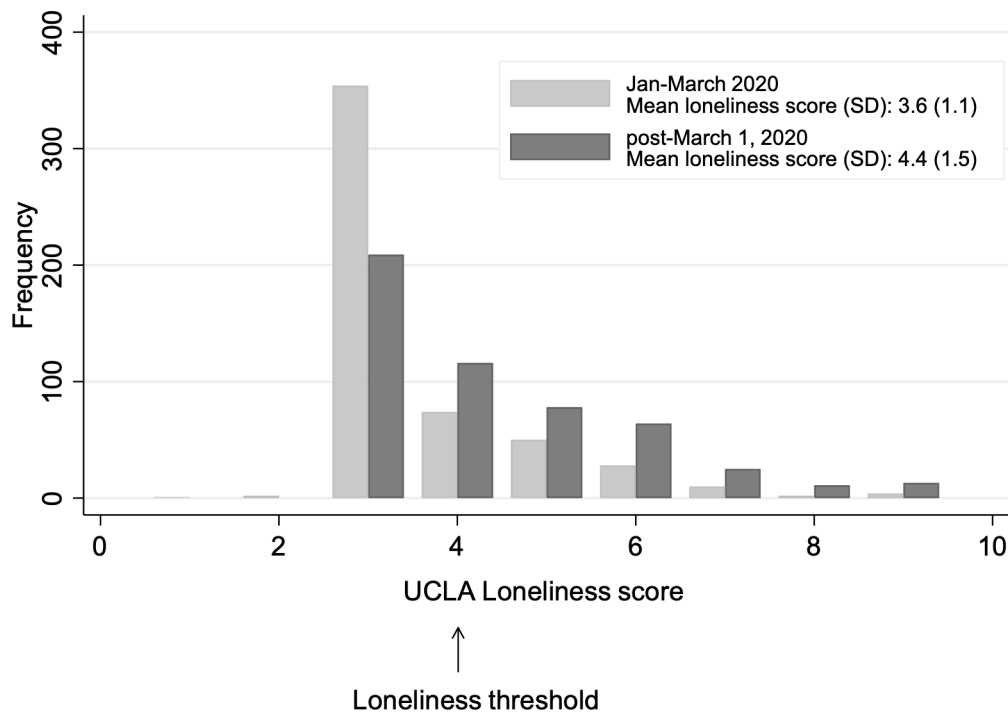
Figure 1 Distribution of the UCLA three-item Loneliness Scale prior to and after 1 March 2020; the ARIC Study. Change in the UCLA Loneliness score from 1 January 2020 through 1 March 2020 to after 1 March 2020 (mean 187 (SD 40) days) was available for 516 ARIC cohort participants. ARIC, Atherosclerosis Risk in Communities; UCLA, University of California at Los Angeles.

SD increase in perceived loneliness among participants reporting that they usually bounce back after hard times, and a 0.77 (95% CI 0.65 to 0.89) SD increase in loneliness among those reporting sometimes, rarely or never being able to bounce back after hard times; table 4). We did not observe an association of self-rated health with an increase in loneliness during the COVID-19 pandemic.

The cognitive function factor score based on cognitive function assessments conducted prior to the COVID-19 pandemic was not associated with loneliness (table 3). Likewise, low educational attainment was not associated

with the prevalence of perceived loneliness. No effect modification of these associations by sex or race was observed.

DISCUSSION
During the COVID-19 pandemic, the observed average loneliness score of the ARIC Study participants (4.37 (SD 1.51)), assessed using the UCLA three-item Loneliness Scale, was very similar to that reported in a random sample of American adults (4.37 (SD 1.74)) also examined during the initial months of the pandemic using the same UCLA

Table 3 Association of self-rated health, emotional resilience and cognitive function with loneliness experienced during the COVID-19 pandemic by older adults; the ARIC Study (n=2984)

Factor	Contrast	Continuous β (95% CI)*	Categorical OR (95% CI)†
Self-rated health	Good or excellent (reference)	0	1
	Fair or poor	0.17 (0.08 to 0.27)	1.26 (1.03 to 1.55)
Ability to bounce back after hard times (emotional resilience)‡	Always (reference)	0	1
	Usually	0.30 (0.22 to 0.37)	1.85 (1.57 to 2.19)
	Sometimes, rarely, never	0.77 (0.65 to 0.89)	4.53 (3.26 to 6.31)
Cognitive function score	Change in UCLA Loneliness Scale per 1 SD change in the cognitive factor score	−0.02 (−0.07 to 0.02)	0.94 (0.83 to 1.07)

Model covariates: age, sex.
*SD change in the UCLA Loneliness score, modelled as a continuous variable.
†The UCLA Loneliness score dichotomised at 4.
‡Emotional resilience was classified a response: 'always', 'usually', or 'sometimes, rarely, or never' to the question: 'How often would you say that you tend to bounce back quickly after hard times?'
ARIC, Atherosclerosis Risk in Communities; UCLA, University of California at Los Angeles.

Table 4 Association of self-rated health and emotional resilience with increase in loneliness experienced by older adults from before to during the COVID-19 pandemic; the ARIC Study (n=449)

Factor	Contrast	Continuous β (95% CI)*
Self-rated health	Good or excellent (reference)	0
	Fair or poor	−0.06 (−0.11 to 0.22)
Ability to bounce back after hard times (emotional resilience)†	Always (reference)	0
	Usually	0.23 (0.01 to 0.43)
	Sometimes, rarely, never	0.46 (0.11 to 0.82)

Model covariates: age, sex.
*SD change in the change in the UCLA Loneliness score, modelled as a continuous variable.
†Emotional resilience was classified a response: 'always', 'usually', or 'sometimes, rarely, or never' to the question: 'How often would you say that you tend to bounce back quickly after hard times?'
ARIC, Atherosclerosis Risk in Communities; UCLA, University of California at Los Angeles.

instrument.[23] We observed that 23.8% of study participants reported that during the time from March 2020 until October 2020, they felt lonely sometimes or often (UCLA three-item Loneliness score ≥6). Our estimate is comparable with the extant estimate of the prevalence of loneliness among US older adults (27.5%) observed during the early months of the COVID-19 pandemic[10] and to the observed 35.9% of the general population in the UK reporting feeling lonely sometimes or often during the first months of the pandemic.[24] The observed proportion of older adults reporting feeling lonely did not differ significantly across subgroups defined by race, sex and age.

In a subset of study participants with loneliness assessed prior to March 2020 and again after the COVID-19 pandemic restrictions were in place, we observed an increase in perceived loneliness among 35.2% of study participants. This is one of the few reports of the change in perceived loneliness from before to during the COVID-19 pandemic. In the mentioned earlier cross-sectional survey conducted in April 2020 in a probability sample of the US population aged 18 years and older, 13.8% of the respondents stated that they always or often felt lonely.[6] Study investigators compared this estimate with the Keiser Family Foundation's estimate of an 11% prevalence of loneliness in the US population in 2018,[7] suggesting a 25.5% increase in perceived loneliness among adults 18 years or older occurring during the COVID-19 pandemic. Although the instruments used to assess loneliness and the definition of loneliness in our study and the two mentioned above studies were different, limiting a direct comparison, our findings suggest that the COVID-19 pandemic may have had a greater impact on the prevalence of loneliness among older as compared with younger adults. It is important, however, to keep in mind that the association of age with the prevalence of perceived loneliness may be region specific. For example, results from the representative population-based Nikkei Research survey conducted in Japan suggest a modestly higher increase in the prevalence of perceived loneliness post as compared with during the COVID-19 pandemic among adults 65 years of age or older as compared with those younger than 65 years, thus confirming our observation.[25] At the same time, data from the combined longitudinal cohort data from France, the Netherlands, Denmark and the UK suggest that during March–July 2020, a larger proportion of adults under the age of 30 years experienced loneliness as compared with those 60 years of age and older.[26]

In the ARIC Study population of older adults, the overall prevalence of the SARS-CoV-2 infection was low, however, we observed a greater prevalence of the infection among black as compared with white participants and among those with less than high school, as compared with those with a high school or greater educational attainment. It is important to note that the mentioned disparities in COVID-19 prevalence were observed among older adults, no longer wage earning, who were not exposed to the virus in the workplace and presumably had relatively little in-person contact with others. Living alone did not influence the observed prevalence of COVID-19.

Social isolation, loneliness and other indicators of social connectivity contribute significantly to physical, cognitive, and psychological health, health-related behaviours, and health-related quality of life. Among individuals 65 years and older, social isolation, defined as lack of engagement with others,[27] is associated with lower global and domain-specific cognitive function, measured cross-sectionally and longitudinally.[28 29] Mental and psychosocial stress, resulting from social isolation, contributes to the prevalence of cerebrovascular diseases and poor cognitive function.[30]

Based on extant literature, we hypothesised that older age, low socioeconomic status and cognitive impairment will be factors associated with the prevalence of loneliness during the COVID-19 pandemic.[5 31] We observed that factors most associated with loneliness were fair or poor self-rated health and the inability to bounce back after hard times, a measure of emotional resilience. Our findings confirm observations from the Health and Retirement Study, which suggest that poor self-rated health is a strong predictor of loneliness.[2] In analyses adjusted for confounders, we observed a gradient in the association of emotional resilience with loneliness. Loneliness, defined as subjective perception of 'unfulfilled social needs',[32] has been found to be longitudinally associated with cognitive decline.[33 34] Interestingly, in this cross-sectional analysis, we did not observe an association of cognitive function with the level of loneliness reported by study participants.

We do not yet have sufficient follow-up data to examine the effect of lockdown restrictions of the pandemic and

the attendant loneliness among older adults on the trajectory of their cognitive health. A recent systematic review of articles on the topic points strongly to the increasing prevalence of cognitive impairment in association with loneliness among older adults.[35] Our overall findings point to the importance of psychosocial factors to perception of loneliness reported by older adults during the pandemic. Participants of the present study reported a high level of social support, yet their self-reported ability to bounce back after hard times varied, suggesting nuances in the agreement between perception of emotional and instrumental support and its stated receipt.

The population of this study has not been randomly selected; therefore, it is not representative of the overall population of older adults. The ARIC cohort was selected to represent all residents aged 45–64 years from three study communities and of black residents aged 45–64 years from Jackson, Mississippi.[36] The cohort experienced significant attrition due to death and non-participation during follow-up from 1987 to 1989 until the onset of the COVID-19 pandemic in March 2020, limiting its representativeness. However, the strength of this study lies in the ascertainment of change in perceived loneliness from before to during the COVID-19 pandemic, as well as availability of validated repeated measures on risk factors, morbidity, and lifestyle and behavioural characteristics. The overall more favourable health profile of those who responded to the Psychosocial Wellbeing Questionnaire, compared with the non-respondents likely biased our estimates of the prevalence of loneliness towards the null, as worse physical health has been found to be associated with increased prevalence of loneliness.[37–43]

In our assessment of participants' perceived loneliness, we used the short three-item UCLA Loneliness Scale. This was dictated by the need for a short telephone, rather than in-person, assessment. However, the unidimensional aspect of the original UCLA Loneliness Scale allows for derivation of constructs simpler than the original 20-item scale, without considerable loss of validity.[17 44] The UCLA three-item Loneliness Scale, which has shown an alpha reliability coefficient of 0.72 relative to the original 20-item scale,[17] has been validated in diverse populations.[45]

Paired with extant reports of an increase in cognitive impairment among older adults living during the COVID-19 pandemic in institutional settings such as retirement communities, our identification of self-rated health and emotional resilience as factors associated with loneliness points to potential avenues for intervention to alleviate the cognitive health sequela of the pandemic in this vulnerable population.

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